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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/523,805	07/29/2005	Hiroshi Shibata	47233-0051	6171

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EXAMINER	
WATTS, JENNA A	

ART UNIT	PAPER NUMBER
4132	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/523,805	SHIBATA ET AL.	
	Examiner	Art Unit	
	JENNA A. WATTS	4132	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02/09/2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *20050209*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 5, 6, 9 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Regarding Claim 5, it is unclear what is meant by deep seawater because a particular depth has not been claimed. Furthermore, the specific mineral composition would not only be fixed to a particular depth of seawater, but also depends on the source of the seawater.

4. Regarding Claim 6, it is unclear how the depth of seawater claimed would correspond to a particular mineral composition because the mineral composition would also depend on the source of the seawater.

5. Regarding Claims 9 and 10, it is unclear what is meant by a sodium concentration in a concentration compartment [that] is “maintained low.” It is unclear to what the “low” concentration is being compared, as “low” is a relative term.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1-6 and 8-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikegami, et.al. (EP 1161886) in view of Shigetomi, et. al. (JP2002-238515).

10. Regarding Claims 1 and 2, Ikegami teaches the production of a seawater mineral component containing composition (Page 3, lines 1-2, 20-22), the seawater being desalinated using an ion-exchange electrodialysis device (Page 7, Embodiment 2, lines

5-9), where the concentrate is made into an aqueous solution having a hardness measured by the EDTA method ranging from 100 and 3,000 (Page 3, line 41). Ikegami teaches that because the Sodium Chloride is mostly removed, the drink does not have a salty taste and does not have a negative effect on health (Page 9, lines 16-17).

11. Ikegami does not specifically teach a sodium concentration of 4 or 6 mg/L or less, when adjusted to form an aqueous solution having a hardness of 100 (EDTA method).

12. Shigetomi teaches a method of manufacturing a drink which can supply mineral ingredients using seawater desalinated by electrodialysis (Page 1, Paragraphs [0003] and [0004] of Machine Translation). Shigetomi performed an evaluation where the mineral concentrate was diluted to different water hardness levels and Sodium concentrations (Paragraphs [0012], [0014] and Table 1 in Paragraph [0016] of Machine Translation), and a sample, with a water hardness of 100 (EDTA method) and a Sodium concentration of 3mg/L, was found to be promising as a mineral drink by the tasting panel, showing the resulting mineral beverage was “drinkable" or suitable. This result is compared to some of the other samples evaluated by Shigetomi where the different combinations of water hardness and Sodium concentration yielded bitter and/or salty, and thus unsuitable products (Paragraphs [0012], [0014] and Table 1 in Paragraph [0016] of Machine Translation, and Page 4, Column 5, Paragraph [0014] of Japanese Patent).

13. It would have been obvious to one of ordinary skill in the art to use a Sodium concentration of 3 mg/L when adjusted to form an aqueous solution, as taught by

Shigetomi, in the mineral drink taught by Ikegami, in order for the mineral drink to be suitable to consumers. One of ordinary skill in the art would have been motivated to use a low sodium concentration such as 3 mg/L in a mineral component–containing drink that is desirable to consumers in order to ensure successful sale of the product.

14. Regarding Claims 3 and 11, Ikegami teaches that the mineral concentrate obtained from the seawater contains Magnesium and Calcium (Page 3, lines 20-22) and further teaches using a tasting panel to determine the effects of the weight ratios of Magnesium to Calcium and hardness levels of the mineral containing drink on the suitability of the mineral containing drink (Page 5, lines 51-56 and Page 6, Table 4). Ikegami teaches when the drink hardness was below 100, the drink was rated well on taste, but contained a very small amount of Magnesium, Calcium and other minerals, which was not desirable from a standpoint of supplementing minerals (Page 6, lines 26-27). Ikegami further teaches that when the drink hardness was above 100 and the Magnesium-to-Calcium weight ratio exceeded four, the drink had a bitter taste of Magnesium (Page 6, lines 29-31).

15. Ikegami does not specifically teach a mineral component containing composition with a Magnesium concentration of 20 mg/L or more when adjusted to form an aqueous solution having a hardness of 100.

16. The exact concentration of Magnesium present in the ratio of Magnesium to Calcium in the mineral-component containing aqueous solution is therefore deemed to be result effective variable with regard to the production of a suitable yet healthy

beverage for consumption. It would require routine experimentation to determine the optimum value of result effective variables, such as the concentration of Magnesium, in the absence of a showing of criticality in the claimed concentration and hardness of the resulting aqueous solution. *In re Boesch*, 205 USPQ 215 (CCPA 1980), *In re Woodruff*, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990). One of ordinary skill in the art would have been motivated by Ikegami to optimize the concentration of Magnesium in the aqueous solution in order to create a resulting beverage that would be pleasing to consumers' tastes, while providing a sufficient amount of nutrients.

17. Regarding Claim 4, as stated above, Ikegami teaches a Magnesium-to-Calcium weight ratio of 4:1 (Embodiment C on Table 4).

18. Regarding Claims 5 and 6, Ikegami teaches that the seawater used is deep water, and at a depth of between 200 to 500m (Page 10, Claim 13).

19. Regarding Claims 7, 8, 9 and 12, the limitations stating "electrodialysis performed using a monovalent cation-selective dialysis membrane until an electric conductivity of less than 10mS/cm is reached" in Claim 7, "electrodialysis is performed a plurality of times" in Claim 8, and the "sodium concentration in a concentration compartment is maintained low" in Claims 9 and 12 are all method limitations and do not determine the patentability of the product, unless the process produces unexpected results. The method of forming the product is not germane to the issue of patentability of the product

itself, unless Applicant presents evidence from which the Examiner could reasonably conclude that the claimed product differs in kind from those of the prior art. See MPEP 2113. Furthermore, there does not appear to be a difference between the prior art final product and the final product resulting from the claimed method because Ikegami in view of Shigetomi teaches the mineral component containing composition with a sodium concentration of less than 4mg/L when adjusted to an aqueous solution with a hardness of 100, as seen in the rejections of Claims 1 and 2 above.

20. Regarding Claim 10, Ikegami teaches a drink produced by adding the water-soluble mineral components to water, wherein the water-soluble mineral components are obtained from seawater (Page 3, lines 31-32).

21. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ikegami, et.al. (EP 1161886) in view of Shigetomi, et. al. (JP2002-238515) as applied above to Claim 1, and in further view of Baker et. al. (Membrane Separation Systems, 1991).

22. Ikegami in view of Shigetomi is relied upon as above in the rejection of Claim 1.

23. Regarding Claim 7, Ikegami teaches that the seawater mineral component-containing composition is obtained by subjecting seawater to electrodialysis, wherein the electrodialysis is performed using cation-exchange membranes (Page 7, lines 5-10). Ikegami teaches that the seawater was first separated into dilute water and concentrate, and the concentrate was then condensed and desalted, and was separated into Sodium Chloride and a Calcium and Magnesium salt solution (Page 7, lines 5-6 and 4-25).

24. Ikegami does not specifically teach that the electrodialysis is performed using a monovalent cation-selective dialysis membrane until an electric conductivity of less than 10 mS/cm is reached.

25. Shigetomi teaches the electrodialysis being performed using monovalent cation-selective dialysis membrane until an electrical conductivity of 5-20 mS/cm is reached (Paragraph 4 and Claim 1 of machine translation). Shigetomi teaches that the range of 5-20 mS/cm, and more specifically 7-15 mS/cm, produces a more desirable extent of demineralization, compared to outside of this range, where efficiency is decreased and desalinization is less effective (Paragraph [0009] of machine translation). Shigetomi teaches that the electrodialysis process using monovalent cation-selective dialysis membranes is not only used for desalinization of salt water for efficiency manufacturing mineral beverages, but is also used in the salt manufacturing industry (Paragraph [0005] of machine translation).

26. Shigetomi does not specifically state the reason for using a monovalent cation-selective dialysis membrane for electrodialysis.

27. Baker et al. teaches that the production of table salt from seawater by using electrodialysis to concentrate sodium chloride is a technique developed and used nearly exclusively in Japan (Membrane Separations Systems, Page 415). Baker et al. further teaches that the key to the success of this technology has been low-cost, highly conductive membranes, with a preferred permeability for monovalent ions. (Membrane Separations Systems, Page 415).

28. It would have been obvious to one of ordinary skill in the art at the time of the invention for the cation-exchange membrane taught by Ikegami to be a monovalent cation-selective dialysis membrane taught by Shigetomi because Shigetomi teaches that electrodialysis using monovalent cation-selective dialysis is also used in the salt manufacturing industry, and Baker et al. teaches that the use of monovalent selective membranes are instrumental in the successful production of table salt from seawater. One of ordinary skill in the art would have been motivated to look to the salt manufacturing industry for a successful method of producing a mineral beverage because both analyses require desalinization of sea water.

29. It would have been obvious to one of ordinary skill in the art at the time of the invention for Ikegami to conduct the electrodialysis until a conductivity of 7-15 mS/cm is attained, as taught by Shigetomi, in order to produce a sufficiently desalinated product in the most efficient way possible. One of ordinary skill in the art would have been motivated to use the most efficient process in order to maximize production of the mineral-containing products.

Examiner's Comment

30. A complete translation of Japanese document Application No. JP 2002-238515 has been ordered from Translations Branch.

Conclusion

31. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JENNA A. WATTS whose telephone number is (571)270-7368. The examiner can normally be reached on Monday through Thursday from 9am to 5pm.

32. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike Lavilla, can be reached on (571) 272-1539. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

33. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/J. A. W./
J. Watts
Examiner, Art Unit 4132
November 17, 2008

/Alicia Chevalier/
Primary Examiner, Art Unit 1794